

PIEZODYNAMIC PRELOAD ADJUSTMENT SYSTEM

ABSTRACT OF THE DISCLOSURE

A preload adjustment device and method are provided for momentum control devices. The preload adjustment device includes a piezodynamic preload spacer and a control system. The piezodynamic preload spacer is coupled to a bearing in the momentum control device. The piezodynamic preload spacer is configured such that the application of a control voltage to spacer causes a change in the spacer dimensions, with that change in spacer dimension adjusting the preload of the bearing within the momentum control device. The control system provides dynamic control of preload by selective application of control voltage to the piezodynamic preload spacer. This allows for adjustments of preload to compensate for changes in operating environment, improving the performance of the momentum control device. Additionally, adjustments of preload can be used to compensate for wear in the bearings that would otherwise negatively impact the life of the momentum control device. In an additional embodiment, the preload adjustment device is used to change preload at a high frequency rate. This high frequency change in preload provides vibrations to the bearing that can facilitate the even distribution of lubrication within the bearing, improving the performance of the bearing.